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Study in *The Lancet*: Antiretroviral Therapy Associated with 92% Decreased Risk of HIV Transmission among HIV-1 Discordant Couples in a Large Multinational Study

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Seattle – Researchers have found that treating HIV-infected persons with antiretroviral therapy (ART) reduces HIV transmission to their sexual partners by more than 90 percent. The study is published this week in *The Lancet*.

“These results are an important finding in the search for effective HIV prevention strategies and the strongest evidence to date that ART might decrease HIV transmission risk,” said Dr. Connie Celum, professor of medicine and global health at the University of Washington and the senior author of the paper.

The findings were part of the Partners in Prevention study, a six-year study coordinated by the International Clinical Research Center and funded by the Bill & Melinda Gates Foundation. More than 3400 heterosexual HIV-discordant couples in which one member had HIV and the other did not were enrolled from seven African countries (Botswana, Kenya, Rwanda, South Africa, Tanzania, Uganda and Zambia). At the beginning of the study, the HIV infected members had high CD4 counts and were not on antiretroviral treatment. Couples were provided counseling and prevention services, followed for up to two years, with regular CD4 measurements and ART referrals made when they became eligible for ART.

During the study, 349 HIV-infected partners initiated ART at an average CD4 count of 198. Of the 103 HIV infections that occurred in these couples, there was only one HIV transmission after ART initiation. In that single event, the HIV-infected partner had started ART about three months prior to HIV infection being first detected in her partner.

Lead study author, Dr. Deborah Donnell, a biostatistician with the Vaccine and Infectious Disease Institute at the Fred Hutchinson Cancer Research Center in Seattle, said “the one transmission indicated that HIV serodiscordant couples should maintain safer-sex practices even when HIV-positive partners are on treatment.”

The proportion of couples who reported having unprotected sex decreased over time, explained the authors. Couples received frequent counseling on HIV risk reduction.

Though the rate of new HIV infections has been declining worldwide, an estimated 7,400 people a day are being infected with HIV, according to UNAIDS. More than 60 million people have been infected with HIV since the pandemic began. AIDS resulting from HIV infection is the leading cause of death in sub-Saharan Africa, and the fourth leading cause of death globally.

“Our analysis of African HIV discordant couples indicates that the risk of HIV transmission is significantly lower after HIV-infected persons initiated antiretroviral therapy,” Dr. Celum said. She noted that a randomized trial is underway to determine the longer-term impact of antiretroviral medications on HIV transmission. “While awaiting those results, our study indicates that initiation of antiretroviral therapy may have a significant public health benefit as well as clinical advantages for the individuals being treated,” she said.

Antiretroviral therapy decreases the concentration of HIV in blood plasma to very low levels, the authors explained, likely making the individual less infectious to others. Viral suppression to very low levels was achieved in 70 percent of individuals in this study, at an average of seven months after starting ART.

Transmission occurred at all CD4 count levels. However since transmission risk was highest among those with CD4 counts less than 200 and not on treatment, findings from this observational cohort indicate the effect of ART on prevention of transmission could be greatest in persons with CD4 less than 200. Additionally, the investigators found that among HIV-infected with CD4 counts above 200 per μ l, HIV transmission rates were highest among those with a viral load above 50 000 copies per ml, suggesting that targeting this group could be an effective way to achieve further population-level reductions in HIV.

This study suggests that starting HIV infected people on ART even late in the disease has synergistic benefits for the individual and HIV prevention. While there is movement to initiate ART earlier for clinical benefits and increasing recognition of the potential HIV prevention benefits with ART, many programs in developing countries have insufficient resources to provide ART coverage to those already in need.

“ART appears to confer a significant prevention benefit across all CD4 ranges, and this study quantifies that more accurately. Our unique findings provide compelling new data for the HIV prevention field,” Donnell said.